

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2004

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305219F PREDATOR DEVELOPMENT/FIELDING

Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	0.000	0.000	81.346	66.466	26.783	27.490	24.433	0.000	0.000
5143 Predator	0.000	0.000	81.346	66.466	26.783	27.490	24.433	0.000	0.000

In FY2005, this is a new PE. In FY2005, Project 5143, Predator, was transferred from PE 0305205F, Unmanned Aerial Vehicles, Project 4755, Predator, in order to better manage Predator funds.

(U) A. Mission Description and Budget Item Justification

The basic MQ-1/MQ-9 system consists of the aircraft, a control station, communications equipment, support equipment, readiness spares packages (RSP), technical data/training, and personnel required to operate, maintain, and sustain the system. The system is designed to be modular and open-ended: mission-specific equipment is employed in a 'plug-and-play' mission kit concept allowing specific aircraft and control station configurations to be tailored to fit mission needs.

The MQ-1 Predator aircraft is a single-engine, propeller-driven, remotely piloted aircraft (formerly called unmanned aerial vehicle) designed to operate over-the-horizon at medium altitude for long endurance sorties. The aircraft is designed to provide real-time Intelligence, Surveillance, Reconnaissance, and Target Acquisition (ISR TA), and attack roles to aggressively prosecute Time Sensitive Targets (TST). The MQ-1 will operate primarily at medium altitudes, integrating with joint aerospace, ground, and maritime forces as well as coalition and Allied forces, to execute combatant commander priority missions. The aircraft carries a Multi-spectral Targeting System (MTS) (a sensor turret that incorporates electro-optical (EO), Infra-Red (IR), laser designator/marker, and IR illuminator) capable of transmitting real-time motion imagery throughout the operational theater. Additionally the aircraft is multi-configurable to carry either a synthetic aperture radar (SAR) or Hellfire laser-guided missiles. The MQ-1 aircraft will continue to evolve and upgrade its capabilities to satisfy new requirements and address reliability and maintainability (R&M) issues as they arise.

The MQ-9 Predator B aircraft is a single-engine, turbo-prop remotely piloted aircraft designed to operate over-the-horizon at medium-to-high altitude for long endurance sorties. The aircraft will be designed primarily to prosecute critical emerging TSTs as a radar-based attack asset with on-board hard-kill capability (hunter-killer) and also perform ISR TA as a secondary role. In the hunter killer role, the aircraft will employ fused multi-spectral sensors to automatically find, fix, and track ground targets (Automatic Target Cueing (ATC)) and assess post-strike results. The MQ-9 is in continuing development and will field capability through incremental (Block) upgrades. Flight characterization evaluation of the original off-the-shelf, prototype aircraft is complete. The next step will be to develop and test a "baseline" capable system. The "baseline" development includes both a risk reduction phase and a System Development & Demonstration (SDD) phase. Risk reduction started in FY03 and includes system design, drawings, specifications, and initial MIL-STD-1760 advanced weapons data bus efforts. The SDD effort begins in FY04 and includes developing and testing the MQ-9's baseline capability. The baseline capability will include increasing the aircraft's gross take-off weight; enhancing aircraft systems to include integrated redundant avionics, ice detection capability, navigation system upgrades, electrical system upgrades, secure data links, sensor/stores management computer, MIL-STD-1760 advanced weapons data bus, advanced sensor and weapons payloads, and improved human-machine interface; integrating standard "precision" weapons (GBU-12/38); hardware and software upgrades to the ground control station (GCS) for MQ-9 operations; completing airworthiness certification and accreditation; and producing applicable training devices that emulate aircraft capabilities. Subsequent block upgrades will continue to evolve the MQ-9's capabilities to satisfy new requirements and address R&M issues as they arise.

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Approximately 15 Predator B aircraft will be purchased prior to completion of SDD due to Congressional and OSD funding adds. To maintain a basic operational capability, these aircraft will require reliability/maintainability and P3I development to keep them viable in supporting SDD and/or to provide an interim operational capability. Much of this development will be common to MQ-1 R&M and P3I efforts.

The Ground Control Station (GCS) functions as the aircraft cockpit and can control the aircraft either within line-of-sight (LOS) or beyond LOS (BLOS) via a combination of satellite relay and terrestrial communications. The GCS is either mobile to support forward operating locations or fixed at a facility to support Remote Split Operations (RSO). A mobile GCS is containerized for deployability while a fixed facility GCS consists of similar capability in a permanent facility. The GCS has the capability to perform mission planning; provide a means for manual and/or autonomous control of multiple aircraft and payloads; allow personnel to launch, recover, and monitor aircraft, payloads, and system communications status; secure data links to receive payload sensor data and command links; monitor threats to the aircraft; display common operation picture; and provide support functions. Additionally, a Launch and Recover GCS (LRGCS) allows for servicing, systems checks, maintaining, launching, and recovering aircraft under LOS control for hand off to a mobile or fixed GCS. The GCS will continue to evolve and upgrade its capabilities to fully support the MQ-1 and MQ-9 aircraft and the missions they perform.

This program is budget activity 7, Operational Systems Development, because it involves Air Force R&D to field a highly capable operational system and provide essential operational capabilities.

(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Previous President's Budget			40.181
(U) Current PBR/President's Budget	0.000	0.000	81.346
(U) Total Adjustments	0.000	0.000	
(U) Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
(U) <u>Significant Program Changes:</u>			
Program restructured to support MQ-1 required improvements and MQ-9 SDD efforts. Funds transferred from PE 0305205F, Project 4755.			

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0305219F PREDATOR DEVELOPMENT/FIELDING			PROJECT NUMBER AND TITLE 5143 Predator		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5143 Predator	0.000	0.000	81.346	66.466	26.783	27.490	24.433	0.000	0.000
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

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(U) **A. Mission Description and Budget Item Justification**

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Exhibit R-2a, RDT&E Project Justification	DATE February 2004
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305219F PREDATOR DEVELOPMENT/FIELDING	PROJECT NUMBER AND TITLE 5143 Predator
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This program is budget activity 7, Operational Systems Development, because it involves Air Force R&D to field a highly capable operational system and provide essential operational capabilities.

(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Accomplishments/Planned Program			
(U) MQ-1/MQ-9 Pre-planned Product Improvement. (To include: Advanced capabilities (including multiple aircraft control/operations), sensor integration, quick reaction capabilities, payload development/integration, weaponization and experimentation, data link upgrades (including encryption and TCDL), mission planning capability, simulator/training devices, and associated ground station and communication equipment development/upgrades.)			12.300
(U) MQ-9 System Development and Demonstration (SDD) (aircraft/GCS/Communication system improvements, development and integration of follow-on sensors, weapon and payload integration , test and training capability, technical data)			46.446
(U) Continue a reliability and maintainability program to ensure the continued viability of the MQ-1/MQ-9 aircraft, GCS, and associated communications equipment.			2.200
(U) System Concept Studies			1.000
(U) Developmental and Operational Test support. including SATCOM leases			3.400
(U) Simulator/training device			15.000
(U) Field support			1.000
(U) Total Cost	0.000	0.000	81.346

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0305219F PREDATOR
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PROJECT NUMBER AND TITLE

5143 Predator

(U) C. Other Program Funding Summary (\$ in Millions)(U) D. Acquisition Strategy

Both the MQ-1 Predator and MQ-9 Predator B will be acquired 'sole-source' through the BIG SAFARI Program Office with General Atomics-ASI as the prime contractor. MQ-1 Predator is in accelerated production with ISR sensors, laser designators, and weapon delivery capability. MQ-9 Predator B will be acquired as a 'Hunter Killer' system through a series of incremental (block) upgrades to rapidly deliver combat capability. Each block upgrade will build on the delivered capability from the previous block upgrade and will include advanced sensor capabilities and evolving weapon payloads.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis										DATE February 2004		
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(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2003 Cost</u>	<u>FY 2003 Cost</u>	<u>FY 2003 Award Date</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
General Atomics ASI (GA-ASI)	SS/CPIF/CPFF	GA-ASI Rancho Bernardo CA						77.446	Feb-05	Continuing	TBD	
Navy Crane	MIPR	Raytheon McKinney TX						1.400	Feb-05	Continuing	TBD	
Subtotal Product Development			0.000	0.000		0.000		78.846		Continuing	TBD	0.000
Remarks: FY04 and prior reported in PE 0305205F												
(U) <u>Support</u>												
ASC	SS/T&M	Various Wright-Patterson AFB OH						1.500	Feb-05	Continuing	TBD	
Subtotal Support			0.000	0.000		0.000		1.500		Continuing	TBD	0.000
Remarks: FY04 and prior reported in PE 0305205F; Includes management of RDT&E activities												
(U) <u>Test & Evaluation</u>												
Misc	Various	Various						1.000	Feb-05	Continuing	TBD	
Subtotal Test & Evaluation			0.000	0.000		0.000		1.000		Continuing	TBD	0.000
Remarks: FY04 and prior reported in PE 0305205F												
(U) Total Cost			0.000	0.000		0.000		81.346		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile

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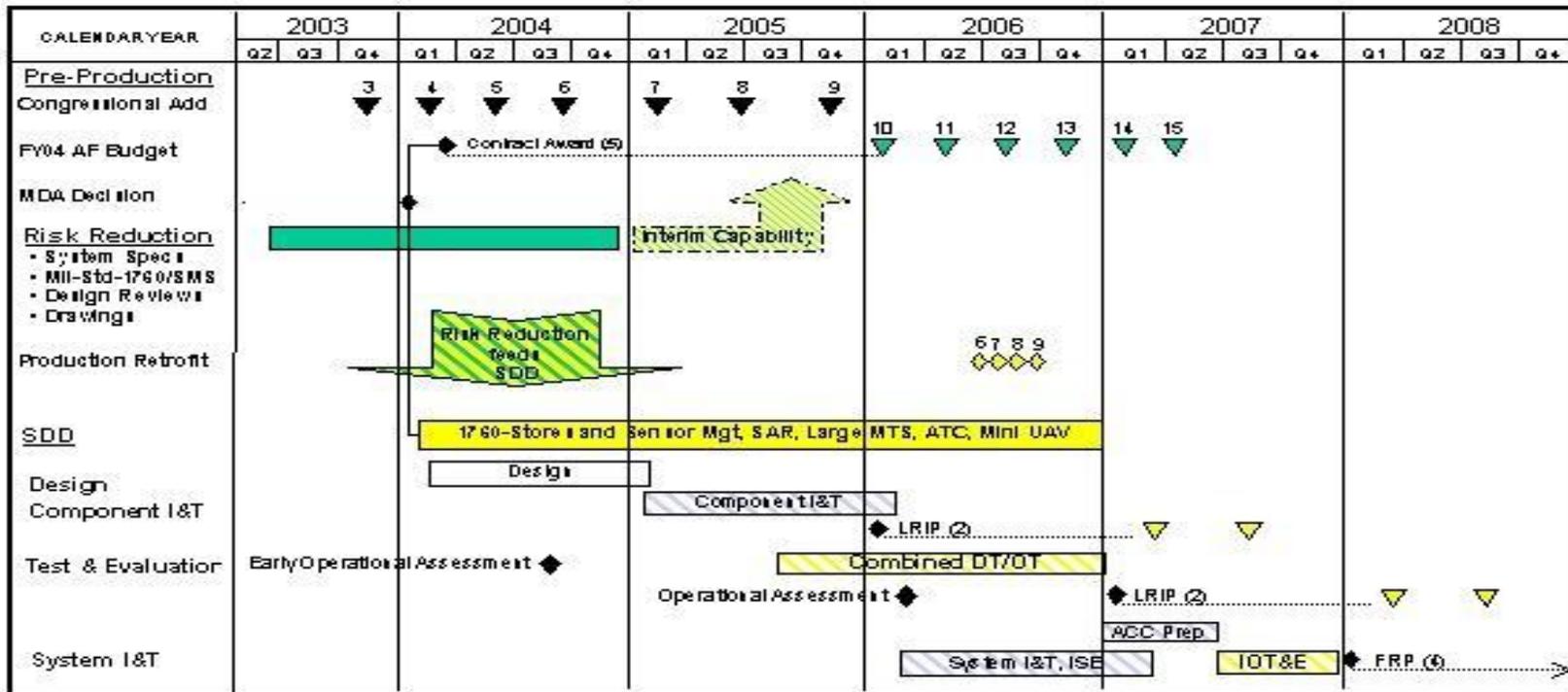
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0305219F PREDATOR
DEVELOPMENT/FIELDING

PROJECT NUMBER AND TITLE
5143 Predator



MQ-9 Predator B Timeline



FY	2003	2004	2005	2006	2007	2008	2009
MQ-9 Aircraft Buys (FY05 APOM)	3	6	2	2	2	4	8

Exhibit R-4, RDT&E Schedule Profile

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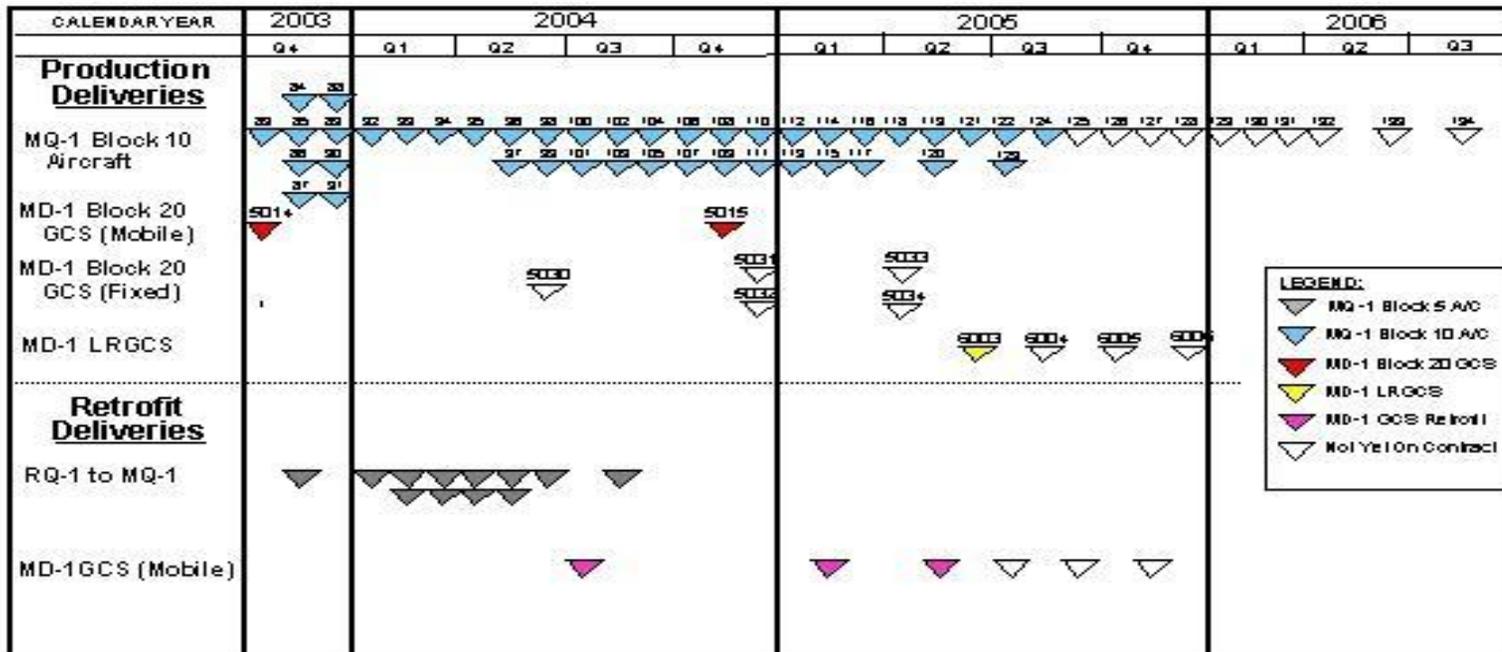
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PROJECT NUMBER AND TITLE
5143 Predator



MQ-1 Predator Timeline



FY	2003	2004	2005	2006	2007	2008	2009
MQ-1 Aircraft Buys (FY05 APOM)	22	10	7	7	7	7	7

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Exhibit R-4a, RDT&E Schedule Detail

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**0305219F PREDATOR
DEVELOPMENT/FIELDING**

PROJECT NUMBER AND TITLE

5143 Predator

(U) Schedule Profile

- (U) Delivery of first production weaponized MQ-1 aircraft
- (U) MQ-9 Flight Characterization Evaluation Complete
- (U) MQ-9 Risk Reduction Start
- (U) MQ-9 Risk Reduction Complete
- (U) MQ-9 SDD Start

FY 2003

2Q

3Q

4Q

FY 2004

2Q

FY 2005

1Q